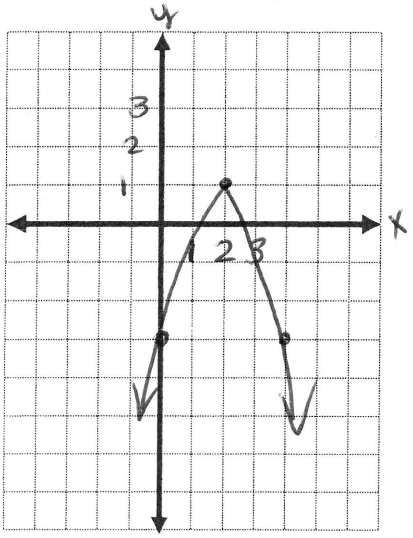
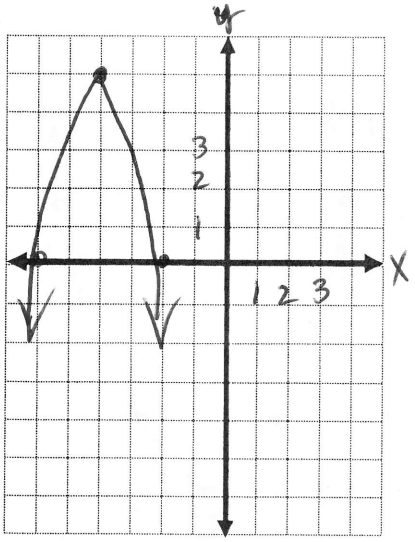
11C Unit 1 - Review Assignment

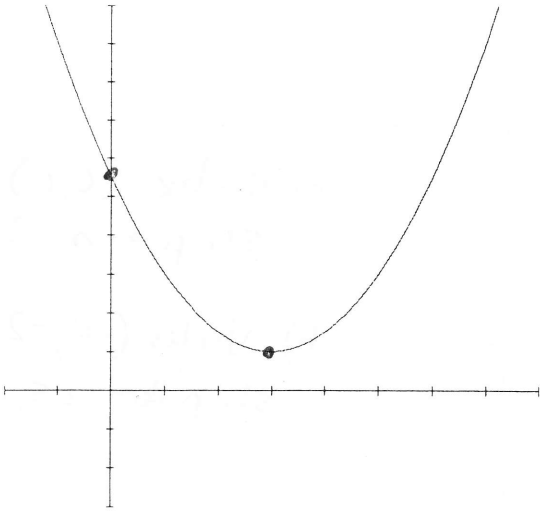
1. Draw the following parabolas:
   Axis of symmetry $x = 2$,
   Y intercept -3, and optimal value = 1

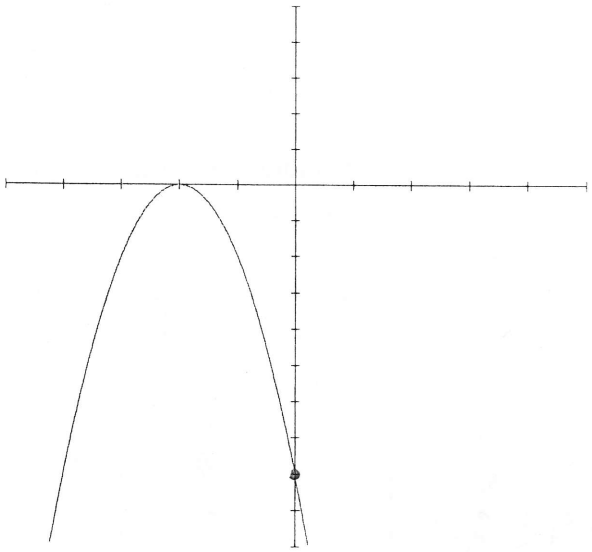


b) axis of symmetry $x = -4$, optimal value 5, zeros -6, -2



2. For the following graphs, complete the chart below

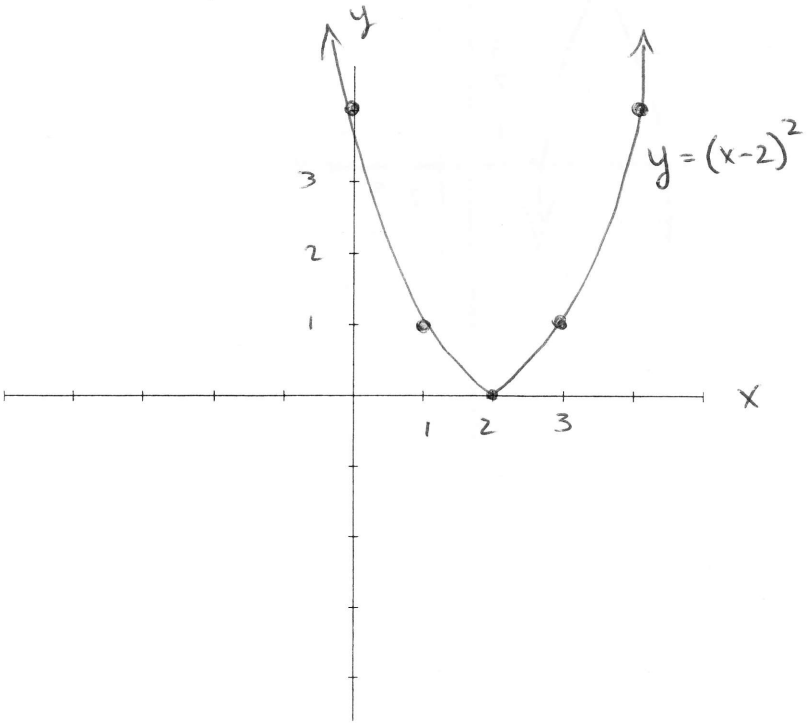




Vertex	(3, 1)	(-2, 0)
Axis of symmetry	X = 3	X = -2
Y intercept	8.5	-8
Optimal value	1	0

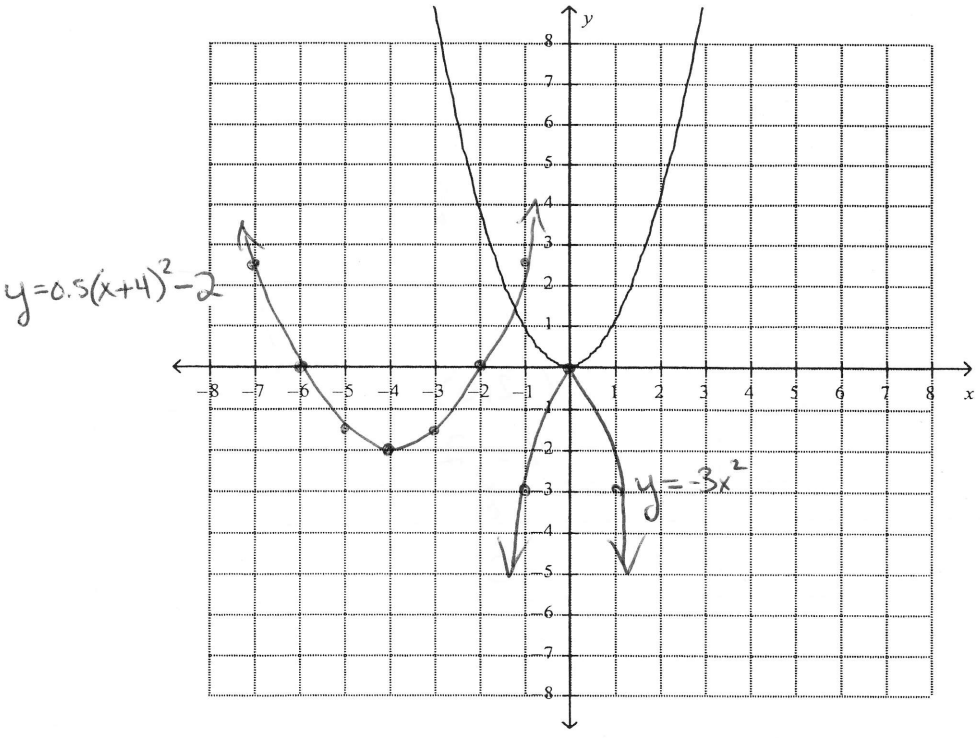
4. Complete the table of values and graph $y = (x-2)^2$

x	y
0	4
1	1
2	0
3	1
4	4



5. The graph of $y = x^2$ is plotted for you. Sketch the graphs of

a) $y = -3x^2$ b) $y = 0.5(x+4)^2 - 2$



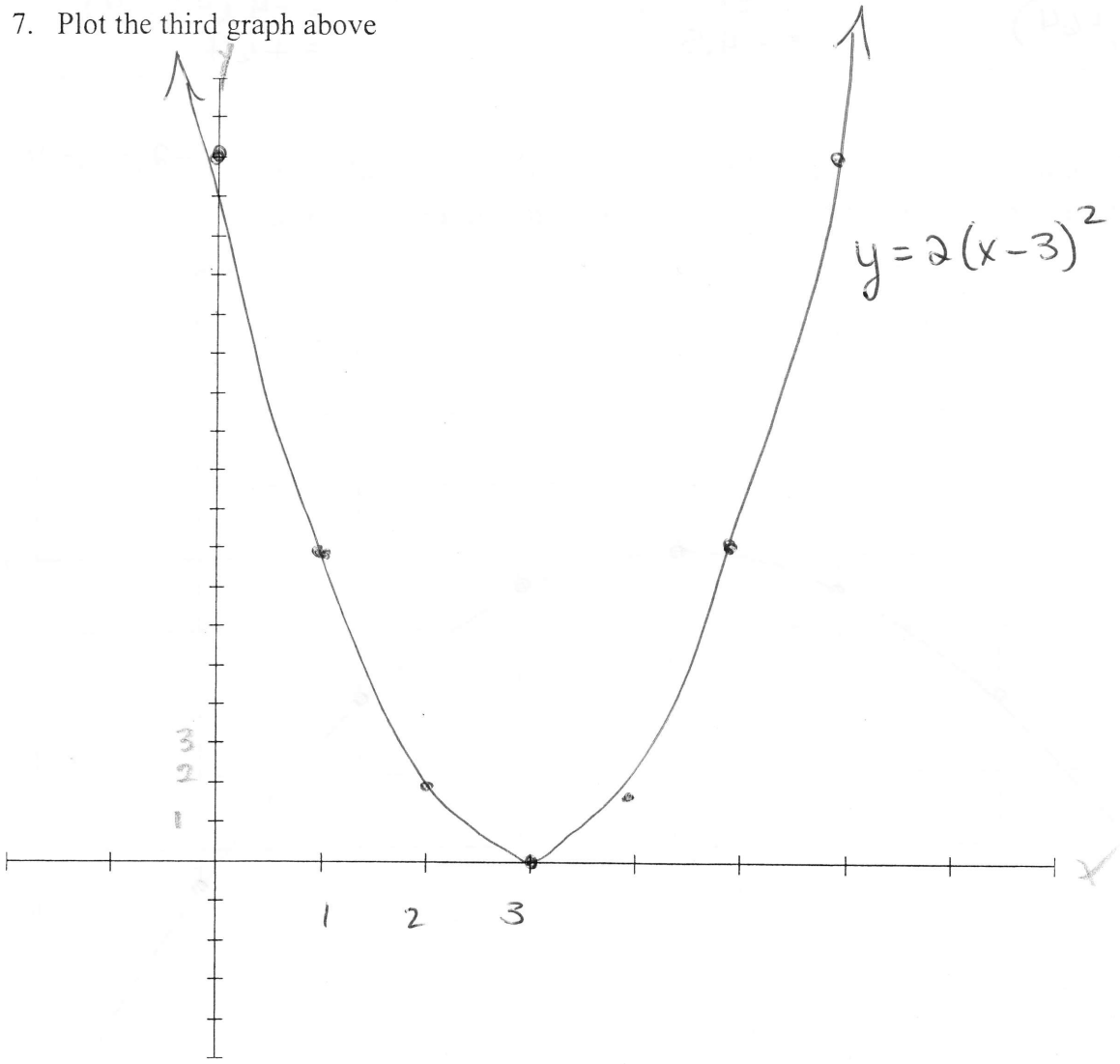
a) Vertex (0,0)
step pattern -3, -9, -15

b) Vertex (-4, -2)
step pattern: 0.5, 1.5, 2.5

6. Complete the following chart:

Quadratic relation	Vertex	Opens	Step Pattern
$y=(x+5)^2-2$	(-5, -2)	up	1, 3, 5
$y=-0.5(x-2)^2-3$	(+2, -3)	Down	-0.5, -1.5, -2.5
$y=2(x-3)^2$	(+3, 0)	up	2, 6, 10

7. Plot the third graph above

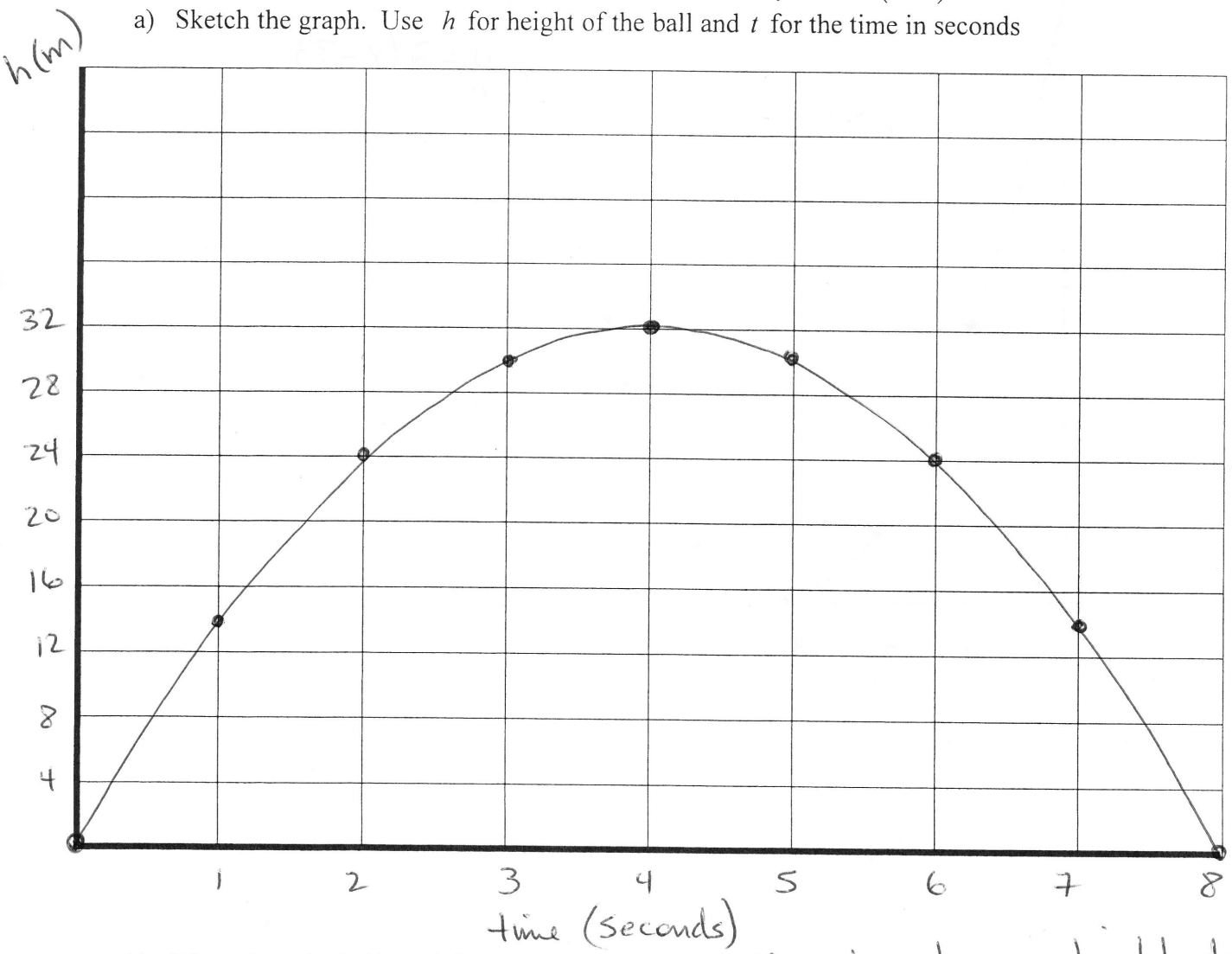


8. Complete the chart

Equation	a) $y = 0.5(x+2)(x+8)$	b) $y = -4(x+1)(x-7)$
Zeros	-2 & -8	-1 & $+7$
Axis of symmetry	$x = \frac{-2+(-8)}{2} = -5$	$x = \frac{-1+7}{2} = \frac{6}{2} = 3$
Opens	Up	Down
Vertex a) $(-5, -4.5)$ b) $(3, +64)$	sub $x = -5$ into equation $y = 0.5(-5+2)(-5+8)$ $= 0.5(-3)(3)$ $= -4.5$	sub $x = 3$ into equation $y = -4(3+1)(3-7)$ $= -4(4)(-4)$ $= +64$

9. A ball is thrown in the air. It's equation is described by $h = -2(t-4)^2 + 32$ $-2, -6, -10$

a) Sketch the graph. Use h for height of the ball and t for the time in seconds



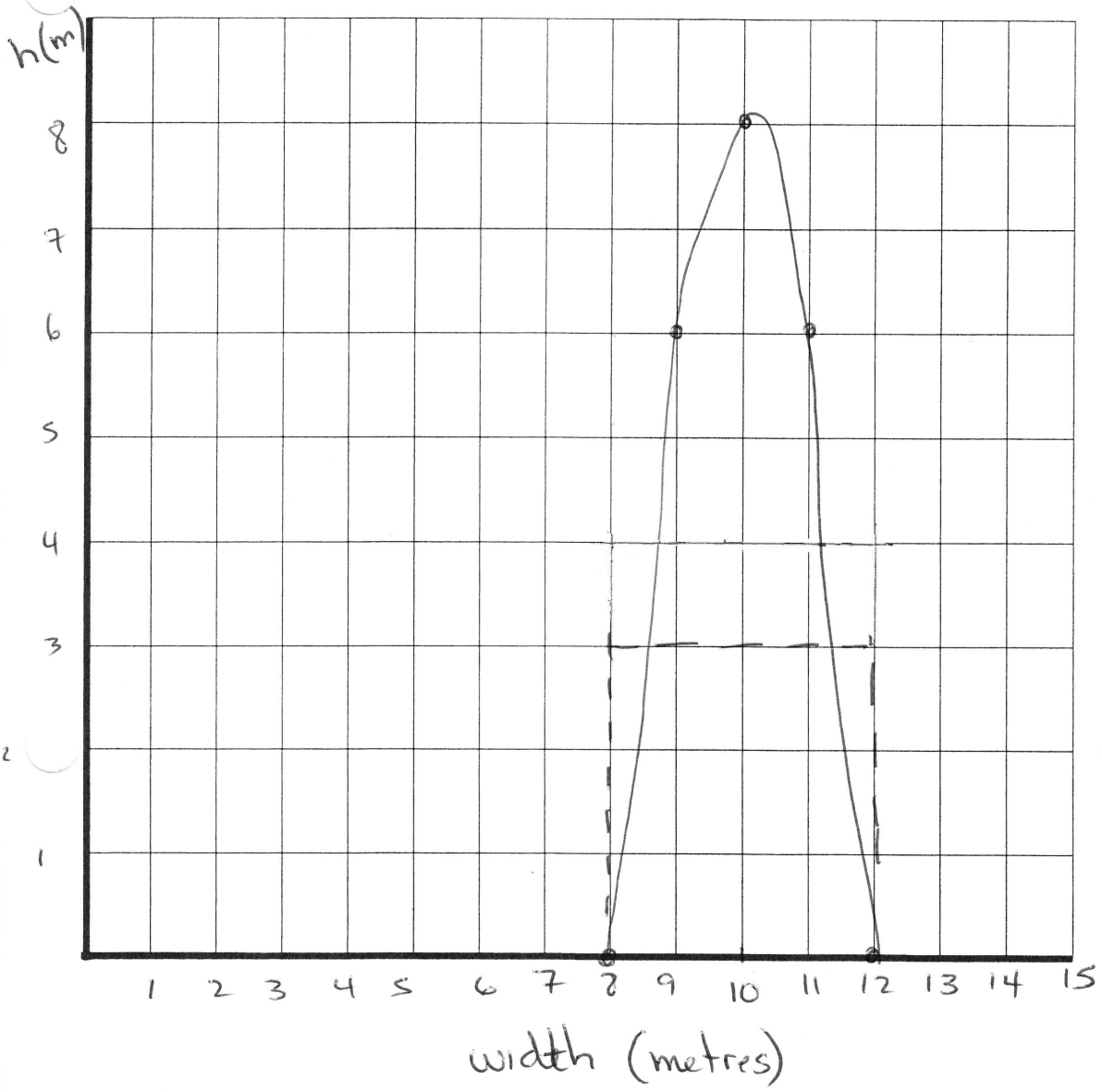
b) When does the ball reach its max height ? The ball reaches its max height at 4 seconds.

c) At what times is the ball at a height of 20 m ?
The ball is at a height of 20m at approximately 1.6sec and 6.4sec.

d) How high is the ball at 3 seconds ?
$h = -2(3-4)^2 + 32$
$= -2(-1)^2 + 32$
$= -2 + 32$
$= 30$
The ball is 30m at 3 seconds.

10. A parabolic bridge is given by $y = -2(x-10)^2 + 8$

a) graph the bridge



b) Will a truck that is 4 m wide and 3 m high fit under the bridge?

The truck would be 4m wide at 3m high. The dotted lines on the graph represent the truck. Just by looking at the diagram it is clear the truck will not fit.